

HUMAN STERILITY

A Study of an Unusual Pedigree

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IN the pedigree now presented, male III.2, who has been married eleven years and is still without an heir, sought advice as to the nature of the sterility which characterized his marriage. An examination of his family history revealed the fact that every one of the seven males of the preceding generation (II), though married, had left no offspring. The females of this generation had had issue, however. There was no obvious cause for the sterility of the marriage of III.2, and no treatment was exhibited. His wife is now pregnant.

The fact that every one of the seven married males of Generation II was without offspring cannot reasonably be explained save by reference to some common cause. The women they married were unrelated, and though these themselves produced no offspring, their married sisters did. For example, the sister of female II.2 (i.e. female II.3) was twice married and had families of three and of two by her respective husbands. Female II.1 had three sisters, all with families. Three of the other introductions by marriage into this generation had brothers or sisters, but these all were unmarried at the time of death, or else, if still living, are still unmarried. There is no record of any sterility in marriage in this pedigree beyond Generation II, and as is shown, the males of Generation III, as well as the females, are fertile, though their reproductive rate is low.

The evidence, as is always the case in human pedigrees, is incomplete. A large number of the individuals of Generations III and IV are still living, many of them being still below the marriage age. The facts, such as they are, are clear. In Generation I there were three brothers and one sister.

The sister did not marry and the brothers did. The first had two sons who married and left no offspring. The third had a son and a daughter who did not marry. The second had five sons, all of whom married and left no issue, and two daughters, both of whom married and had offspring. Of these, both males and females are fertile in mating, but the marriage of one son, III.2, proves to be fertile only after eleven years.

These facts, though well worthy of record, cannot sustain a lengthy and speculative discussion concerning the nature of the cause of sterility in human matings. In the absence of greater and more intimate knowledge of the individuals concerned, it is impossible to point directly to the cause of this sterility. It is reasonable, however, to postulate that the seven males of Generation II were sterile in mating owing to the fact that they possessed in common, being related, some hereditary factor or factors, leading to the development of sterility, which they received from the related males of Generation I. These factors apparently operate so as to produce a sex-limited condition, for the females of Generation II were not sterile in mating, but apparently transmitted some or all of the factors corresponding to this condition, since their sons, though fertile, exhibit a fertility that is relatively poor. It should be stated that the males of Generation II are socially successful through their own efforts, and exhibit no signs of any obvious kind of physical defect or of physiological disharmony.

For the expression of sterility in a sexually-reproducing species two individuals are required: it is not the individual but the mating that is sterile. Since the females of Generation II and the males of

Generation III of this pedigree are fertile in mating, it is reasonable to assume that infecundity of the males of Generation II was responsible for the sterility of their marriages. The facts relating to artificial parthenogenesis permit us to assume that probably lack of fertilizing ability on the part of the spermatozoon is a more common cause of sterility than is an absence of response on the part of the ovum. It would seem that in this family the ovum is readily fertilized, but that the spermatozoon is deficient in fertilizing ability. This deficiency

was complete in Generation II but somewhat repaired in Generation III. We may assume, therefore, that the males of Generation III received from their mothers factors which improved the fertilizing ability of their gametes.

If, in this way, there can pass from the female to her sons, factors affecting the fertilizing ability of the spermatozoa, there can be a quantitative interpretation of fertility, and an explanation of similarities and dissimilarities in reproductive rates of the different generations in pedigree is provided.

